

Amendments to the Claims

1. (currently amended) A closed three-site quantum particle system, comprising: a first site in which the energy is controllable; a second site in which the energy is controllable; states in the first and second sites that are strongly coupled to each other by coherent tunnelling, and where the ~~the~~ a tunnelling rate is controllable; and, a third site in which the energy is controllable, and where the state in the third site is weakly coupled by coherent tunnelling to the first and second states, so that the third state is able to map out the populations of the first and second states as its energy is scanned with respect to the first and second states.

2. (original) A system according to claim 1, wherein the first and second states are a solid-state charge qubit with one particle shared between the two sites.

3. (original) A system according to claim 2, wherein the system is operated in the superposition basis with an integrated readout using the third site as a probe state.

4. (original) A system according to claim, 2 or 3 wherein Adiabatic Fast Passage (AFP) is employed as a readout mechanism.

5. (original) A system according to claim 4, wherein the difference between the probe energy and the qubit, and the tunnelling rate between the probe and the qubit are modulated to effect AFP.

6. (original) A system according to claim 4, wherein the AFP trajectory is reversed to re-initialise the qubit into a known state.

7. (previously presented) A system according to claim 1, wherein the energies and tunnelling rates are controlled using gate electrodes.
8. (original) A system according to claim 7, wherein the voltages on the gate electrodes are controlled.
9. (original) A system according to claim 7, wherein a sensitive electrometer is used for reading out the population in the third state.
10. (original) A system according to claim 9, wherein the electrometer is realised by a single electron transistor (SET) which monitors the charge in the third, weakly coupled, site.
11. (original) A system according to claim 10, wherein the electrometer is realised by a quantum point contact.
12. (previously presented) A system according to claim 1 when used for readout from a quantum computer.
13. (original) A system according to claim 1, wherein alternatively, the first site involves a solid-state spin qubit, and the second site involves a reference spin, and the third site is used as a probe site.
14. (original) A system according to claim 13, wherein the relative spins of the first and second sites are converted into charge distribution information.
15. (original) A system according to claim 13 or 14, wherein Adiabatic Fast Passage (AFP) is employed as a readout mechanism.

16. (original) A system according to claim 15, wherein the difference between the probe energy and the qubit, and the tunnelling rate between the probe and the reference states are modulated to effect AFP.

17. (original) A system according to claim 16, wherein the AFP trajectory is reversed to re-initialise the qubit into a known state.

18. (previously presented) A system according to claim 13 wherein the energies and tunnelling rates are controlled using gate electrodes.

19. (original) A system according to claim 18, wherein the voltages on the gate electrodes are controlled.

20. (original) A system according to claim 19, wherein a sensitive electrometer is used for reading out the population in the third state.

21. (original) A system according to claim 20, wherein the electrometer is realised by a single electron transistor (SET) which monitors the charge in the third, weakly coupled, site.

22. (original) A system according to claim 21, wherein the electrometer is realised by a quantum point contact.

23. (previously presented) A system according to claim 13, applied to readout from a quantum computer.

24. (original) A system according to claim 23, wherein the quantum computer uses nuclear spin or electron spin qubits.

25. (original) A system according to claim 1, wherein the system is used with flux quanta or 2D electron gas, and a third state introduced for readout.

Claims 26-41 are canceled.